Christopher R. Culpepper

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CAREER OBJECTIVE

To continue my career in Electrical or Computer Engineering: solving interesting problems, designing electronic and/or RF hardware, or embedded software, preferably in the aerospace or subsurface domain.

EXPERIENCE

Electrical Engineer — *October 2019 - Present*

FTL Labs Corporation, Amherst MA

- Designed, assembled, tested FPGA RFSoC based RADAR system
  - Included Xilinx RFSoC module, X-Band RF LO, downconverter
  - Fully owned electrical hardware, as well as FPGA code
  - Project included a large amount of reverse engineering and RF design
  - Mechanically designed add-ons for commercial RADAR
  - Iterated design to meet signal integrity, EMI, shock, vibration testing
- Designed and built large li-ion battery for underwater applications, designed with safety in mind
- Designed, implemented acoustic threshold measurement system, with absolute SPL, HW + SW
- Designed interface electronics, analog piezo load cell interface, COTS LED module dimmer
- Reverse engineered commercial laser diode driver to implement circuit

Senior Electrical Engineer — *Coop 2013-2017, FT 2017-2019*

General Dynamics Mission Systems, Pittsfield MA

- Performed software and systems testing on high-integrity mission-critical software
- Performed integration and repair operations on legacy hardware
- Performed tasking at customer locations and pre-deployment locations

Test Engineer Co-op — *January 2016 - May 2016*

Space Exploration Technologies, Hawthorne CA

- Designed and built hardware to test bias-T HD cameras
- Created software to automate the creation of trouble reports
- Troubleshot issues with avionics test racks

EDUCATION

Bachelor of Science, Computer Engineering

Rochester Institute of Technology, Rochester NY, Graduated May 2017

Digital Signal Processing	Cyborg Theory
Data Communication and Networks	HW & SW Design for Crypto Applications

PROJECTS

FPGA SDR RF Exploration (in progress)

- Building FPGA SDR exploration system to learn RF, VHDL, DSP, FPGA networking
- Initially using RF "lego" modules, transitioning to custom PCBs
- Created custom VHDL drivers for frequency generation, ADC, I2S
- Currently writing custom DMA SG drivers to send data to "real" computer for display

Home Networking (Homelab)

- Focus on internal and external services running on VMs, Linux, FreeBSD
- DIY'ed cables, on and off-site backup, storage
- VLAN seperation, hardware PCI passthrough, PoE

Yaesu VX-8 Battery

- Designed, built and tested a battery for a handheld Amateur Radio
- Designed a PCB that features USB-C charging, balancing and temperature monitoring
- Designed a 3D printed case featuring compliant clips, light pipes and a tight internal layout

Various Other Projects:

Soviet 120mm^2 RGBW VFD driver	Racecar Rollcage and Endurance Prep
Motorcycle Speedometer	Race Car Data logger and Comms Board

SKILLS & AWARDS

Eagle Scout	First Aid/AED/CPR, WFA, Stop the Bleed

Languages & Software:

C	Wireshark
Kicad PCB Design Software	AutoIt Automation Scripting
Linux (Arch, Debian, Red Hat)	OpenSCAD and FreeCAD CAD Software
VHDL	DOORs Requirement Management
Python	Networking Equipment Configuration

PERSONAL INTERESTS AND HOBBIES

Amateur Radio Extra	Photography (Analog, digital)
Camping, hiking, and dancing	Holography (early stages)
Community Building	Carbon fiber layup
3D Printering	Licked thing that was in space